Room

DETROIT PUBLIC LIBRARY

JAN 15 1968

TECHNOLOGY & SCIENCE

electronics & power

The Journal of the Institution of Electrical Engineers

VOLUME 13 1967

Published monthly, price 10s. Annual subscription £5

© 1967

THE INSTITUTION OF ELECTRICAL ENGINEERS

SAVOY PLACE, LONDON WC2

Publishing Department: PO Box 8, Southgate House, Southgate, Stevenage, Herts.

PAGINATION OF EACH ISSUE OF VOLUME 13

pages	*month*	*pages*	*month*
1–36	January	243–284	July
37–66	February	285–326	August
67–104	March	327–360	September
105–150	April	361–404	October
151–186	May	405–444	November
187–242	June	445–492	December

The Institution is not as a body responsible for the opinions expressed in 'Electronics & Power', unless it is stated that an article or a letter officially represents the Council's views.

PRINTED BY UNWIN BROTHERS LIMITED, WOKING AND LONDON (580J)

INDEX

to 'Electronics & Power'

Volume 13 1967

Items in 'Electron aspects' and 'Engineering spotlight', writers of letters to the Editor and books reviewed are listed in separate appendixes and not in the main body of the index.

A

Accounts of the IEE for 1966 267
Allanson, J. T. *The nonlinear world of psychological acoustics* 250
Angelini, A. M. *Electricity supply in Italy* 332
Announcements to IEE members 32, 59, 98, 144, 180, 236, 277, 320, 354, 396, 437, 483
Annual General Meeting of the IEE 144, 273
Annual Report of the IEE for 1966–67 262
Appointments and nominations 32, 59, 98, 180, 277, 354, 437
Approval of domestic appliances—a survey of British and CEE tests by R. Harvey 126
Approval schemes for electrical appliances by R. Harvey 43

B

Barlow, H. E. M.
· Award of Faraday Medal to 58
· Biographical note of 58
BEAMA publication 397
Beged Dov, A. G. *Information systems and management practice* 329
Benevolent Fund, Incorporated, of the IEE
· Court of Governors 143, 436
· Local Honorary Treasurers of 143, 436
Benzimra, B. J. *A. D. Blumlein—an electronics genius* 218
Berry, G. *Street lighting today—a review of British practice* 4
Blumlein, A. D.—an electronics genius by B. J. Benzimra 218
Books (*see* Appendix D)
Bowden, Lord. Graham Clark Lecture (13th) on *Some problems in the organisation of science in the modern world* 189
Britain, stereophonic broadcasting in by G. J. Phillips 287
Britain, teaching crisis with industrial implications in 466
Britain's unstable economy—can planning succeed?: UKAC 6th annual lecture, by R. Stone: Article based on 40
British archaeology and the electrical engineer 162
British Standards, new and revised 31, 91, 175, 304, 354, 397, 481
Broadcasting (stereophonic), in Britain by G. J. Phillips 287
Broughall, J. A. Hunter Memorial Lecture (9th) on *Electric traction in the railways of the future:* Article based on 46
Brown, Sir Stanley
· *Fascination of electrical power engineering* 407
· Profile of 394
Building research, electricity in—some British developments by J. F. Eden 200

C

Cambridge 1 mile radiotelescope by Sir Martin Ryle 208
Campbell, R. H. *Fast reactors* 373
Carmichael, I. F. *Some thoughts on synchronous machines* 90
CEGB's plans for power-system control by H. E. Pulsford and P. F. Gunning 245
CEI
· Annual report of 136
· Examination of 199
Character recognition—the way ahead by E. A. Newman 84
Charter and bylaws (IEE), changes in 24
Chilbolton 25 m steerable aerial by R. W. Meadows 193
Church buildings, floodlighting by A. G. Smith 417
Closing the frequency gap—recent developments in submillimetre-wave techniques by W. A. Gambling 413
Cobbe, B. M. *Traffic control for West London* 118
Committees of the IEE: Constitution
· Council, 1967–68 430
· Divisional Boards, 1967–68 430
· Local Centres, 1967–68 431
· Miscellaneous, 1967–68 430, 431
· Overseas Branches and Committees, 1967–68 435, 436
· Special Technical Committees, 1967–68 484
Common ground—British archaeology and the electrical engineer by R. Holmes 162
Computer translation—is it worth while? by W. L. Price 343
Conference publications (IEE) 32, 59, 98, 180, 236, 320, 354
Control & Automation Division of the IEE
· Board of: Constitution of (1967–68) 430
· Chairman, 1967–68: Biographical note of 395
· Premiums: Awards of 396
Control engineering in higher education by J. C. West 123
Control systems, living by P. H. Hammond 338
Copeland, K. *Electricity, electronics, muscles and nerves* 464
Council of the IEE
· 1966–67: Constitution of 141
· 1967–68: Constitution of 430
· Committees of (1967–68): Constitution of 430
· Overseas Representatives of 142
Cowell, T. K. *Electronics at the bedside* 461

D

Daresbury Nuclear Physics Laboratory 295
Dent, K. H. *The development of gas-cooled reactors* 366
Development of gas-cooled reactors by K. H. Dent 366
Domestic appliances, approval of—a survey of British and CEE tests by R. Harvey 126
Dummer, G. W. A. *Integrated electronics—a historical introduction* 71

E

Early days in radio research by R. L. Smith-Rose 253
Eastwood, E.: Biographical note of 395
Eccles, Sir Josiah
· Biographical note of 58
· Honorary Fellowship (IEE): Election to 58
Economics of nuclear power by C. E. Iliffe 377
Eden, J. F. *Electricity in building research—some British developments* 200
Education and training
· *Control engineering in higher education* by J. C. West 123
Education for the microelectronics era by G. D. Sims and B. H. Venning 81
Elections and transfers 28, 55, 97, 143, 179, 232, 278, 315, 398, 438, 482
Electric traction in the railways of the future: 9th Hunter Memorial Lecture, by J. A. Broughall: Article based on 46
Electrical-accessory design by E. J. Sutton 112
Electrical appliances, approval schemes for by R. Harvey 43
Electrical engineering, some contributions of, to medicine by D. W. Hill 447
Electrical equipment for flammable atmospheres—are our standards good enough? by H. G. Riddlestone 409
Electrical power engineering, the fascination of by Sir Stanley Brown 407
Electricity Council publications 481
Electricity, electronics, muscles and nerves by K. Copeland 464
Electricity for Sabah by P. V. Reveley 16
Electricity in building research—some British developments by J. F. Eden 200
Electricity supply in Italy by A. M. Angelini 332
Electricity's research effort—the British picture by P. R. Howard 298
Electromagnetic puzzles by E. R. Laithwaite 196; answers 232
Electron aspects (*see* Appendix A)
Electronics at the bedside by T. K. Cowell 461
Electronics Division of the IEE
· Board of: Constitution of (1967–68) 430
· Chairman, 1967–68: Biographical note of 395
· Premiums: Awards of 396
Engineer, the social responsibility of by M. W. Thring 292
Engineering spotlight (*see* Appendix B)
Engineers and scientists—understanding the differences by R. Hoyle 49
ERA publications 91, 304, 397
Essen, L. *A revolution in timekeeping* 172
Examination (the IEE)
· Board of examiners for 1967 236
· Board of examiners for 1968 483
· Report of 1966 (October and November) examination 98
· Report of 1967 (April) examination 438

F

Faraday Medal: 45th award, to H. E. M. Barlow 58
Fascination of electrical power engineering by Sir Stanley Brown 407
Fast reactors by R. H. Campbell 373
Fellowship of the IEE, Honorary (*see* Honorary)
Flammable atmospheres, electrical equipment for—are our standards good enough? by H. G. Riddlestone 409
Floodlighting church buildings by A. G. Smith 417
Frequency gap, closing the—recent developments in submillimetre-wave techniques by W. A. Gambling 413
Fuses—some quality and reliability considerations by E. Jacks 11

G

Gambling, W. A. *Closing the frequency gap—recent developments in submillimetre-wave techniques* 413
Gas-cooled reactors, development of by K. H. Dent 366
Graduate & Student Premiums (IEE): Awards of 396
Graham Clark Lecture (13th), by Lord Bowden 189
Gunning, P. F., and Pulsford, H. E. *Power-system control—the CEGB's plans* 245

H

Hammerton, M. *Simulators for training* 8
Hammond, P. H. *Living control systems* 338
Harvey, R. *Approval of domestic appliances—a survey of British and CEE tests* 126
Harvey, R. *Approval schemes for electrical appliances* 43
Haslam, R. J. *Water-cooled reactors* 370
Higher education, control engineering in by J. C. West 123
Hill, D. W. *Some contributions of electrical engineering to medicine* 447
Holmes, R. *Common ground—British archaeology and the electrical engineer* 162
Honorary Fellowship (IEE): Election of Sir Josiah Eccles and Prof. Sir Bernard Lovell 58
Honours and distinctions conferred on IEE members 59, 320

Hooper, J. E. N. *The Royal Radar Establishment* 154
Howard, P. R. *Electricity's research effort—the British picture* 298
Hoyle, R. *Engineers and scientists—understanding the differences* 49
Hunter Memorial Lecture (9th), by J. A. Broughall: Article based on 46
Hurley, F. I. *Nuclear power today* 363

I

IEE, the
· Accounts for 1966 267
· Annual General Meeting 144, 273
· Annual Report for 1966–67 262
· Charter and bylaws, changes in the 24
· Council (*see* Council)
· Examination (*see* Examination)
· Officers of 141, 430, 484
· Representatives of, on other bodies (*see* Appointments and nominations)
· Special General Meeting 144, 272
Iliffe, C. E. *The economics of nuclear power* 377
Income-tax relief on IEE subscriptions 32
Information systems and management practice by A. G. Beged Dov 329
Integrated-circuit applications—a look at the future by G. C. Padwick 78
Integrated electronics—a historical introduction by G. W. A. Dummer 71
Integrating the LEB power system by A. G. Milne and J. H. Maltby 203
ISA publications 397
Italy, electricity supply in by A. M. Angelini 332

J

Jacks, E. *Fuses—some quality and reliability considerations* 11

L

Laithwaite, E. R. *Electromagnetic puzzles* 196; answers 232
Laser sources in medicine by T. Powell 458
LEB power system, integrating the by A. G. Milne and J. H. Maltby 203
Lectures
· Graham Clark (13th), by Lord Bowden 189
· Hunter Memorial (9th), by J. A. Broughall: Article based on 46
· IEE Power Division, Annual (1967), by A. M. Angelini: Article based on 332
· UKAC 6th annual, by R. Stone: Article based on 40
Letters to the Editor (*see* Appendix C)
Living control systems by P. H. Hammond 338
Local Centres and Sub-Centres of the IEE
· Benevolent Fund, Local Honorary Treasurers of 143, 436
· Committees, 1967–68: Constitution of 431
· Officers of 141
Looking to the future by J. A. Ratcliffe 1
Lovell, Prof. Sir Bernard
· Biographical note of 58
· Honorary Fellowship (IEE): Election to 58

M

M'Pherson, P. K. *The plain man's guide to control* 302
Mable, S. E. R. *Medical applications of magnetic-tape recording* 455
Magnetic-tape recording, medical applications of by S. E. R. Mable 455
Maltby, J. H., and Milne, A. G. *Integrating the LEB power system* 203
Management practice and information systems by A. G. Beged Dov 329
Meadows, R. W. *The Chilbolton 25m steerable aerial* 193
Medical applications of magnetic-tape recording by S. E. R. Mable 455
Medical signals, recording by A. J. Smale 452
Medicine, laser sources in by T. Powell 458
Medicine, some contributions of electrical engineering to by D. W. Hill 447
Medicine, ultrasonics in by J. A. Newell 449
Meetings of the IEE
· Annual General 144, 273
· Special General 144, 272
Members of the IEE
· Announcements to 32, 59, 98, 144, 180, 236, 277, 320, 354, 396, 437, 483
Members of the IEE (continued)
· Honours and distinctions conferred on 59, 320
· Subscriptions: Income-tax relief on 32
Merriman, J. H. H.: Biographical note of 395
Microelectronics age 70
Microelectronics technology—a look at fabrication methods by R. I. Walker and R. Naylor 75
Milne, A. G., and Maltby, J. H. *Integrating the LEB power system* 203
Monograph series (IEE) 277

N

Naylor, R., and Walker, R. I. *Microelectronics technology—a look at fabrication methods* 75
NBS report 397
NEL publications 397
New products 33, 61, 99, 145, 180, 236, 279, 321, 355, 399, 439, 485
Newell, J. A. *Ultrasonics in medicine* 449
Newman, E. A. *Character recognition—the way ahead* 84
Nominations and appointments 32, 59, 98, 180, 277, 354, 437
Nonlinear world of psychological acoustics by J. T. Allanson 250
Nuclear power, economics of by C. E. Iliffe 377
Nuclear power today by F. I. Hurley 363

O

Obituary 31, 59, 98, 140, 178, 236, 277, 319, 353, 397, 437, 483
Officers of the IEE 141, 430, 484
Overseas Branches, Committees, Joint Groups and Professional Groups of the IEE
· Constitution of 435, 436
· Officers of 142, 143
Overseas Premiums (IEE): Awards of 396
Overseas Representatives of the IEE Council 142, 436

P

Padwick, G. C. *Integrated-circuit applications—a look at the future* 78
Pay television by K. A. Russell 225
Phillips, G. J. *Stereophonic broadcasting in Britain* 287
Plain man's guide to control by P. K. M'Pherson 302
Powell, T. *Laser sources in medicine* 458
Power Division of the IEE
· Annual Lecture (1967) by A. M. Angelini: Article based on 332
· Board of: Constitution of (1967–68) 431
· Chairman, 1967–68: Biographical note of 395
· Premiums: Awards of 396
Power system control—the CEGB's plans by H. E. Pulsford and P. F. Gunning 245
Premiums (IEE): Awards of 396
President of the IEE (1966–67) (*see* Ratcliffe, J. A.)
President of the IEE (1967–68) (*see* Brown, Sir Stanley)
Price, W. L. *Computer translation—is it worth while?* 343
Psychological acoustics, the nonlinear world of by J. T. Allanson 250
Pulsford, H. E., and Gunning, P. F. *Power-system control—the CEGB's plans* 245

R

Radio research, early days in by R. L. Smith-Rose 253
Railways of the future, electric traction in the: 9th Hunter Memorial Lecture, by J. A. Broughall: Article based on 46
Ratcliffe, J. A. *Looking to the future* 1
Reactors (fast) by R. H. Campbell 373
Reactors (gas-cooled), development of by K. H. Dent 366
Reactors (water-cooled) by R. J. Haslam 370
Recording medical signals by A. J. Smale 452
Report, IEE Annual, 1966–67 262
Representatives of the IEE on other bodies (*see* Appointments and nominations)
Reveley, P. V. *Electricity for Sabah* 16
Revolution in timekeeping by L. Essen 172
Riddlestone, H. G. *Electrical equipment for flammable atmospheres—are our standards good enough?* 409
Rippon, E. C.: Biographical note of 395
Royal Radar Establishment by J. E. N. Hooper 154
Russell, K. A. *Pay television* 225
Ryle, Sir Martin *The Cambridge 1 mile radiotelescope* 208

S

Sabah, electricity for by P. V. Reveley 16
Scholarships (IEE), Awards of 437
Science & Education Joint Board of the IEE
· Constitution of (1967–68) 431
· Premiums: Awards of 396
Science in the modern world, some problems in the organisation of: 13th Graham Clark Lecture by Lord Bowden 189
Sims, G. D., and Venning, B. H. *Education for the microelectronics era* 81
Simulators for training by M. Hammerton 8
Smale, A. J. *Recording medical signals* 452
Smith, A. G. *Floodlighting church buildings* 417
Smith-Rose, R. L. *Early days in radio research* 253
Social responsibility of the engineer by M. W. Thring 292
Some contributions of electrical engineering to medicine by D. W. Hill 447
Some problems in the organisation of science in the modern world: 13th Graham Clark Lecture by Lord Bowden 189
Some recent books (*see* Appendix D)
Some thoughts on synchronous machines by I. F. Carmichael 90
Special General Meeting of the IEE 144, 272
Stereophonic broadcasting in Britain by G. J. Phillips 287
Stone, R. UKAC 6th annual lecture, on *Britain's unstable economy—can planning succeed?:* Article based on 40
Street lighting today—a review of British practice by G. Berry 4
Sutton, E. J. *Electrical-accessory design* 112
Synchronous machines, some thoughts on by I. F. Carmichael 90

T

Technical publications 31, 91, 175, 304, 354, 397, 481
Teaching crisis with industrial implications in Britain 466
Thring, M. W. *The social responsibility of the engineer* 292
Timekeeping, a revolution in by L. Essen 172
Traffic control for West London by B. M. Cobbe 118
Training, simulators for by M. Hammerton 8

U

UK Government publications 397
UK Science Research Council: Daresbury Nuclear Physics Laboratory 295
UKAC annual lecture (6th), by R. Stone: Article based on 40
UK3—Britain's own scientific satellite 108
Ultrasonics in medicine by J. A. Newell 449
United Nations publication 354

V

VDE specifications 354
Venning, B. H., and Sims, G. D. *Education for the microelectronics era* 81

W

Walker, R. I., and Naylor, R. *Microelectronics technology—a look at fabrication methods* 75
Water-cooled reactors by R. J. Haslam 370
West, J. C. *Control engineering in higher education* 123
West London, traffic control for by B. M. Cobbe 118

Appendix A

Electron aspects

· Acoustic-noise measurement 69
· Aluminium for overhead lines 327
· Aluminium wiring installations 106
· Amateurs on show 406
· *Ariel* and aerials 188
· Automation at Pembroke 67
· Automation in the brewery 39

Electron aspects (continued)
- Batteries and fuel cells in the news 243
- Beating the bandwidth squeeze 244
- Big advance in ultrasonic machining 153
- Britain's future in atom power 244
- British Calibration Service in action 327
- BSI aids exporters 38
- Cables for road warming 67
- Canals as cable routes 105
- CEGB annual report—1966–67 406
- Computer-controlled telephone exchange 68
- Contrasts in Hong Kong (new power station) 38
- Control techniques in the warehouse 69
- Controlled vegetables 286
- Co-operation in welding 406
- Cutting the cost of automation 361
- Diamond thermistor 38
- Digging deep 286
- Dilemma for the UK? 39
- Diode (new) for cheap sound films 39
- Down the drain 188
- Electric car on show 129
- Electric cars—new motors and batteries 446
- Electric cars—still a myth? 187
- Electrical cable glands for underwater equipment 362
- Electrical equipment in flammable atmospheres 285
- Electricity and fire 153
- Electronic hygrometer (new) 153
- Electronic sleeping pill 106
- Electrostatically focused ceramic cathode-ray tube 2
- Engineers—not enough recognition? 445
- Eurocontrol Experimental Centre opened 67
- European installation practice 187
- Exploding wires may power laser 'guns' 175
- Floodlighting for Table Mountain 68
- Future power prospects reviewed 3
- Gunnery calculations computerised 152
- Hearing aid for the classroom 69
- Holographic character recognition 153
- Improving component reliability 244
- Interchange between colour-television systems 15
- International transfer fee for technologists? 445
- Inventions for industry 285
- Laboratory for learning 38
- Language laboratory at Eton 3
- Law research speeded by computer 68
- Lighting and productivity 37
- Linear-motor application (new) 107
- L.S.A. for higher frequencies 107
- Magnetic sensor for geological measurement 2
- Magnets get bigger 328
- Making the most of computers 107
- Mass production of tunnel diodes 68
- Microelectronics education—some case histories 151
- Microwave links for short hops 69
- Morality and machines 286
- More light on industry 361
- NBS nonmagnetic laboratory 3
- Nuclear consultants 406
- Nuclear survey 362
- Peltier cooling for spare-part surgery 3
- Planning ahead 187
- Plasma phaseout at Culham 328
- Policy for Europe 243
- Random thoughts on lighting 188
- Revolution in industrial thinking? 243
- Rig for testing large fans (new) 152
- RIPPLE goes into action 286
- Sardinia–Italy power link 105
- Satellite stations to order 2
- Second Goonhilly 105
- Sight and sound 446
- Sizewell nuclear power station 151
- SRC—a good year 362
- Static relays and protection 37
- Statistics of the electronics industry 285
- Status and image—the American way 328
- Thyristors in the home—a warning 327
- Time sharing in action 361
- Transformer rides on air 106
- Twins and quads 446
- UK joins *Mallard* 362
- Ultrasonic machine tool (new) 153
- Under the Underground 107
- Underground supply for airfield sites 38
- Underwater power cable (longest) 105
- Where are Britain's technologists? 405
- X rays aid welding research 151

Appendix B

Engineering spotlight

- Advanced harbour radar for Teesside 379
- Advanced information techniques 216

Engineering spotlight (continued)
- Airborne computer (new) 259
- Aluminium in transformers 471
- Applications for silicones 474
- Automatic character reader sorts the mail 348
- Bedside monitoring for intensive care 308
- Britains first 400kV cascade-voltage transformer 470
- Capacitance method for liquid-depth measurement 470
- Closed-circuit television at the dogtrack 383
- Computer monitors student response 380
- Concorde fuel-temperature simulator 381
- Continuously tunable laser-generated source 473
- Counting lightning flashes 259
- Dimensions in numerical control (new) 381
- Direct-writing process for circuit production 428
- D.O.F.I.C.—a new circuit concept 87
- Electric surface heaters 217
- Electro-Agricultural Centre 308
- Electronic control for 300MW turbogenerator 159
- Fluidics—an up-and-coming field 56
- 400kV cable for higher electrical stresses 426
- Giant integrated-circuit production plant 469
- Gunn-effect device commercially available 27
- High r.f. power from series Gunn diodes 426
- Higher-voltage electron microscopes 160
- Incremental recorders, a new generation of 346
- Induction heater for steel billets (giant) 260
- Infrared television 306
- Intercontinental submarine cable (a new) 217
- Inventions from NRDC 56
- Kingsnorth generator successfully tested 88
- Laser crystal (giant) 309
- Laser micromachining aids large-scale integration 347
- Locomotive development in East Germany 122
- Major orders for p.c.m. equipment 214
- Making Farnborough's research pay 305
- Marine automation equipment 474
- Maximum-demand control equipment 427
- Meteorological satellite tracker 469
- Microcircuit-mask service 472
- Microwaves for print drying 217
- Mobile satellite terminals 261
- Most powerful magnet ever? 306
- New liner incorporates latest stabiliser developments 425
- Nuclear desalination—an economic assessment 348
- Nuclear-reactor equipment on show 215
- Numerical control for insulator machining 307
- 132kV vacuum circuit breaker 260
- Outside-broadcast units (new) 428
- Oxide-coated glass-cane resistors 231
- Permanent magnets for future transport 427
- Photoelectric aid to flying safety 349
- Power-microcircuit control modules 379
- Radar for fog-bound vehicles 309
- Safe distribution system for building sites 382
- Site-assembled autotransformer 349
- 660MW generators for Hinkley Point B 213
- Steel foundations for 300MW turbogenerator 383
- Submillimetre interferometer at the NPL 309
- Television aids airport-safety control 472
- Thick-film research at the ERA 307
- Thyristors for h.v.d.c. 473
- TXE2 electronic exchange in service 27
- U.H.F. acoustoelectric oscillator 426
- Zinc-air batteries for electric propulsion 468

Appendix C

Letters to the Editor

- Acker, F. A. S. *Two views on moral responsibility* 475
- Allen, F. J. *Inductor-alternator terminology* 54
- Allen, K. H. *Underground-services detection* 311
- Allen, P. H. G. *Public image of the engineer* 92
- Allison, A. A. *Changes in membership structure* 274
- Anderson, J. W. *Why not 'corrigendum'?* 311
- Aspden, H. *Ballistic theory of light* 22
- Aspden, H. *Magnetic anomalies* 95
- Bailey, S. B. *Why charge for mailed papers?* 275
- Baldwin, C. T. *Electromagnetic puzzles* 386
- Baldwin, N. V. *IEE wiring regulations* 138
- Ballingall, J. M. *Changes in membership structure* 169
- Barfield, T. J. *Are engineers educated?* 137
- Barrington, A. E. *The brain drain* 386
- Baxter, E. W. *Change in title for the IEE?* 92
- Beck, J. *Changes in membership structure* 275
- Bell, D. A. *CEI examinations* 386
- Bellairs, G. F. *Plurals* 477
- Berg, G. F. *Social responsibility of the engineer* 385
- Berry, G. *Street lighting* 93

Letters to the Editor (continued)
- Blythe, E. J. *Why not educated engineers?* 476
- Bolton, M. P. *Changes in membership structure* 168
- Bourne, A. C. *Railways of the future* 139
- Bowles, C. *The art and science of dowsing* 476
- Bradshaw, H. O. *Changes in membership structure* 138
- Braithwaite, S. *Lament for British graphical symbols* 22
- Bristow, H. R. *Mathematics and morality* 230
- Broughall, J. A. *Railways of the future* 139
- Brown, F. J. *Daresbury Nuclear Physics Laboratory* 422
- Browne, K. F. K. *A new unit?* 139
- Buchan, M. F. *Electromagnetic puzzles* 312
- Cathcart, D. M. *Changes in membership structure* 315
- Chadwick, P. J. *Stop worrying about status* 171
- Clarke, C. G. T. *Mechanism of the lightning flash* 21
- Clarke, G. G. *Social responsibility of the engineer* 385
- Clausen, H. *Social responsibility of the engineer* 386
- Coaton, J. R. *Thyristor control for lighting* 421
- Collinson, C. D. *Creative design* 94
- Crow, D. J. *Changes in membership structure* 138
- Dalton, L. P. *Changes in membership structure* 93
- Demetsopoullos, I. C. *Ballistic theory of light* 140
- Deshaw, Z. *Electrical accessories* 352
- Deshaw, Z. *Lampholders* 174
- Dick, A. L. *Changes in membership structure* 168
- Dickinson, R. E. *Why not 'corrigendum'?* 311
- Dinnis, I. S. *Changes in membership structure* 275
- Dummelow, J. *Plurals* 422
- Dummer, G. W. A. *Integrated circuits* 174
- Easterling, C. E. *Plurals* 352
- Ellen, L. W. *Electromagnetic puzzles* 387
- Feinberg, R. *What is a professional engineer?* 171
- Flegg, H. G. *Rolled and folded journals* 352
- Foord, K. J. *Status of the engineer* 170
- Forrest, J. S. *The Faraday lecture* 275
- Fowke, A. F. *Public image of the engineer* 92
- Freestone, R. *The IEE—1871–1971* 351
- Fuller, L. H. *'O hateful error . . .'* 230
- Fuller, L. H. *Obituary* 20
- Gainsborough, G. F. *Changes in membership structure* 351
- Gallop, J. W. *Ballistic theory of light* 95
- Gambling, W. A. *Electrical-engineering education in the USA* 229
- Gange, H. G. *The engineer's social responsibility* 423
- Goddard, E. H. *Symmetrical components in unbalanced 3-phase systems* 53
- Goode, W. A. *The engineer's social responsibility* 424
- Goulden, O. A. *Status of the engineer* 275
- Graneau, P. *Low-temperature conductors* 55
- Gray, J. *Current/e.m.f. relationships* 52
- Gray, J. *Electromagnetic puzzles* 313
- Griffin, J. *Are engineers educated?* 52
- Harding, J. R. *Public image of the engineer* 170
- Harper, C. T. A. *Electrical accessories* 230
- Head, J. E. *Magnetostriction* 54
- Heap, H. R. *Are engineers educated?* 137
- Heap, H. R. *Electromagnetic puzzles* 314
- Hirst, A. W. C. *Public image of the engineer* 137
- Holland, P. H. *Educational qualifications* 422
- Hornby, W. M. P. *A plea for sanity* 386
- Horwood, H. *The art and science of dowsing* 476
- Howard, J. A. *IEE wiring regulations* 94
- Hoyle, R. *Engineers and scientists* 169
- Hudson, D. *Changes in membership structure* 20
- Jinman, M. *Social responsibility of the engineer* 385
- Johnson, J. *IEE wiring regulations* 20
- Jollyman, H. G. *Social responsibility of the engineer* 385
- Kidd, H. *A plea for sanity* 310
- King, C. *Lighting for commercial buildings* 22
- King, C. *Offpeak tariffs* 21
- Kirby, H. V. *Changes in membership structure* 350
- Laithwaite, E. R. *Electromagnetic puzzles* 313, 314, 386
- Langley, G. A. *The art and science of dowsing* 387
- Lavelle, P. M. *Status of engineering qualifications* 137
- Lawrence, H. H. *Are engineers educated?* 229
- Leathlean, S. W. B. *Publish the Faraday lecture?* 170
- Leverton, J. H. *The art and science of dowsing* 387
- Lewis, C. A. *Is modern education wasted?* 174
- Lewis, T. X. *The engineer's social responsibility* 424
- Lilley, B. *The art and science of dowsing* 476
- Long, H. J. *Whither the IEE?* 422
- Lorton, P. R. *Electrical accessories* 352
- Lynes, H. S. *Street lighting* 93

Letters to the Editor (continued)

- McLeod, D. *Status of the engineer* 275
- McNulty, B. D. *Changes in membership structure* 350
- Manning, J. F. *Electrical accessories* 274
- Marshall, R. C. *Electromagnetic puzzles* 314
- Matchett, E. *Creative design* 94
- Meares, O. M. *Britain's unstable economy* 310
- Miley, J. *The engineer's day* 138
- Millward, N. *Status of the engineer* 170
- Minter, R. W. *Are engineers educated?* 137, 312
- Minter, R. W. *Engineers and scientists* 169
- Mitchell, J. W. E. *Creative design* 138
- Mitchell, T. *Engineers and scientists* 169
- Money, R. W. *Early oscillators* 139
- Morgan, E. M. *Graphical symbols and phasor diagrams* 312
- Morrison, J. M. *Electrical accessories* 230
- Mortimer, E. L. *V.L.F. machine oscillator* 421
- Morton, C. P. *Whither the IEE?* 423
- Murdoch, P. *Electromagnetic puzzles* 313
- Murland, J. R. W. *The art and science of dowsing* 387
- Muyobo, N. Ba. K. *Designatory letters and the CEI* 310
- Myers, B. R. *Electrical-engineering education in the USA* 384
- Nelson, H. G. *Plurals* 352
- Newton, C. E. *Electromagnetic puzzles* 313
- Oats, R. *Changes in membership structure* 52
- Ogilvie, J. R. *Changes in membership structure* 168
- O'Rourke, J. V. *Phasor diagrams* 139
- Permentiers, M. A. *Electrical accessories* 274
- Pettifer, J. K. *Changes in membership structure* 169, 230
- Prentice, J. A. *Rolled and folded periodicals* 477
- Probert, P. E. *Electrical accessories* 422
- Ractliffe, A. D. J. *Why not 'corrigendum'?* 311
- Rainford, H. *Safety in flammable atmospheres* 384
- Rawcliffe, G. H. *Universities and industry* 421
- Reading, J. *Lament for British graphical symbols* 23
- Redding, R. J. *Electrical safety in explosive atmospheres* 171
- Rees, D. J. *Induction heating* 352
- Rege, P. R. *Symmetrical components in unbalanced 3-phase systems* 53
- Robb, A. C. *The engineer's social responsibility* 423
- Roberts, G. *Archaeological instruments* 315
- Robson, J. E. *Phasor diagrams* 94
- Roots, W. K. *Electrical-engineering education in the USA* 311
- Roscoe, A. W. *The engineer in society* 351
- Rossiter, B. *The British engineer in Canada* 475
- Ruderfer, M. *Ballistic theory of light* 96
- Sandeman, E. K. *Britain's unstable economy* 230
- Saunders, M. W. *Public image of the engineer* 20
- Scott, W. J. *Integrated circuits* 171
- Semler, E. G. *Human engineering* 20
- Shears, P. A. *The engineer's social responsibility* 424
- Shindler, K. *Electrical accessories* 230
- Short, H. *Street lighting* 93
- Siemaszko, Z. S. *Reliability prediction* 21
- Simmons, A. G. *Changes in membership structure* 53
- Spencer, A. J. *Permanent magnets* 53
- Streets, G. *Clearances on electric railways* 171
- Styles, B. C. *The 'property' of magnetism* 477
- Sutton, E. J. *Electrical accessories* 230, 274, 352
- Tagg, G. F. *Permanent magnets* 94
- Taylor, C. V. *The art and science of dowsing* 476
- Taylor, P. H. *Direct application of electrical energy* 95
- Thomas, D. J. *Obituary* 93
- Thomas, G. B. *Public image of the engineer* 20, 92
- Thomas, J. C. *Electrical accessories* 422
- Thring, M. W. *Two views on moral responsibility* 475
- Tillcock, G. *Changes in membership structure* 350
- Turnbull, J. C. *Automatic translation* 422
- Turner, D. *The art and science of dowsing* 476
- van de Bogart, A. *Ballistic theory of light* 95
- Vincze, S. A. *The electric car* 352
- Voelcker, H. B. *Electrical-engineering education in the USA* 477
- Voigt, P. G. A. H. *Last word on the aether?* 231
- Waldron, R. A. *Ballistic theory of light* 22, 54, 95, 96, 140
- Wales, W. A. *A. D. Blumlein* 312
- Wardle, J. *Changes in membership structure* 93
- Wass, C. A. A. *Electrical safety in explosive atmospheres* 171
- Watson, J. A. *Graphical symbols* 95
- Welbourn, D. B. *Britain's unstable economy* 139
- Wellings, J. G. *Instrument transformers* 93
- West, R. A. *Phasor diagrams* 231

Letters to the Editor (continued)

- West, R. A. *Why 'corrigendum'?* 230
- West, R. A. *Why use Latin?* 386
- White, G. *A new unit?* 231
- Willis, D. J. *The engineer's social responsibility* 350
- Wilson, D. E. J. *Social responsibility of the engineer* 385
- Wilson, D. H. *Status of the engineer* 229
- Windebank, H. W. *Changes in membership structure* 138
- Winter, R. M. *Changes in membership structure* 315
- Worrall, R. W. *Engineers or scientists?* 170
- Wrigley, S. *Nuclear fuel elements* 477

Appendix D

Some recent books

- Alt, F. *Advances in bioengineering and instrumentation* 276
- Anner, G. E. *Elementary nonlinear electronic circuits* 392
- Appels, J. Th., and Geels, B. H. *Handbook of relay switching technique* 30
- Atkinson, G. H., and Stevens, R. A. *Solution of problems in advanced electrical engineering* 318
- Bayliss, L. E. *Living control systems* 29
- Beerens, A. C. J. *Measuring methods and devices in electronics* 30
- Betts, J. A. *High-frequency communications* 388
- Bockris, J. O'M. (*editor*) *Modern aspects of electrochemistry—No. 4* 318
- Brailsford, F. *Physical principles of magnetism* 130
- Bubenik, V. (*editor*) *Information processing machines* 29
- Burkett, J., and Plumb, P. *How to find out in electrical engineering* 353
- Carl, H. *Radio relay systems* 130
- Casimir, H. B. G., and Gradstein, S. *An anthology of Philips research* 135
- *CCIR handbook on high-frequency directional antennas* 392
- Chubb, B. A. *Modern analytical design of instrument servomechanisms* 276
- Clarricoats, J. *World at their fingertips* 478
- Clemmow, P. C. *The plane wave spectrum representation of electromagnetic fields* 176
- Cochran, B. L. *Transistor circuit engineering* 479
- Cohu, M. *Photométrie éclairage intérieur et extérieur* 177
- Cohu, M. *Sources lumineuses* 177
- Collin, R. *Foundations for microwave engineering* 29
- *Conference on electrical insulation and dielectric phenomena: annual report, 1966* 319
- Coombs, C. F. *Printed circuits handbook* 353
- Cruz, J. B., and Van Valkenburg, M. E. *Introductory signals and circuits* 479
- Csaki, F. *Szabalyozasok dinamikajo* 177
- Cutler, P. *Electromagnetic circuit analysis. Vol. 2—Active networks* 276
- Day, W. D. *Introduction to vector analysis for radio and electronic engineers* 177
- Dean, K. J. *Integrated electronics* 353
- Delacroix, J. L. *Physique des plasmas. Vol. 2—Gaz faiblement ionisés* 178
- DeRoy, B. E. *Automatic control theory* 318
- Dineley, J. (*editor*) *The use of digital computers in electric power systems* 318
- Dineley, J. L., and Preece, C. *Kaldas programming* 480
- Dummer, G. W. A. (*editor*) *Advanced electronic techniques* 429
- Dummer, G. W. A. *Fixed resistors (2nd edn.)* 480
- Duncan, C. J. (*editor*) *Modern lecture theatres* 135
- Eaglesfield, C. C. *Laser light* 479
- Ebert, H. (*editor*) *Physics pocketbook* 392
- Ellison, A. J. *Generalised electric machines* 478
- Faulkner, E. A. *Principles of linear circuits* 30
- Filipowsky, R. F., and Muehldorf, E. I. *Space communications systems* 131
- Filipowsky, R. F., and Muehldorf, E. I. *Space communications techniques* 131
- Fisher, J. E., and Gatland, H. B. *Electronics from theory into practice* 135
- Fontaine, G. *Transistors for audiofrequency—audio frequency amplification* 317
- Gardner, F. M. *Phaselock techniques* 57
- Garrett, C. G. B. *Gas lasers* 390
- Gibbs, W. J. *Electric machine analysis using tensors* 131
- Giles, A. F. *Electronic sensing devices* 30
- Gray, D. *Centralised and automatic controls in ships* 176

Some recent books (continued)

- Gregory, S. A. (*editor*) *The design method* 391
- Grycz, B. *Fourth state of matter* 135
- Handel, S. (*editor*) *A dictionary of electronics* 178
- Haring, D. R. *Sequential circuit synthesis: state assignment aspects* 390
- Harper, W. R. *Contact and frictional electrification* 480
- Hartley, G. C., Mornet, P., Ralph, F., and Tarran, D. J. *Techniques of pulse-code modulation in communication networks* 389
- Hemingway, T. K. *Electronic designer's handbook* 178
- Herrero, J. H., and Willoner, G. *Synthesis of filters* 57
- Hetterscheid, W. Th. *Designing transistor i.f. amplifiers* 132
- Hilken, T. J. N. *Engineering at Cambridge University 1783–1965* 317
- Hilton, P. *Homotopy theory and duality* 317
- Hoadley, H. J. *Manual of oscillography* 392
- Höhn, E. *Dictionary of electrotechnology: German—English* 30
- Hölzler, E., and Thierbach, D. (*editors*) *Nachrichtenübertragung—Grundlagen und Technik* 429
- Hutchings, D. (*editor*) *Engineering science at the university* 480
- *Industrial applications for isotopic power generators* 319
- Jenkins, B. D. *Introduction to instrument transformers* 318
- Jones, C. V. *Unified theory of electrical machines* 478
- Kapitza, P. L., and Wainstein, L. A. (*editors*) *High-power electronics—Vol. 2* 132
- Kendall, E. J. M. *Modern physics for electrical engineers* 135
- Keropyan, K. K., and Chegolin, P. M. *Electrical analogues in structural engineering* 392
- King, J. W., and Newman, W. S. (*editors*) *Solar-terrestrial physics* 481
- Kirshner, J. M. (*editor*) *Fluid amplifiers* 135
- Klir, J., and Valach, M. *Cybernetic modelling* 429
- Koenig, H. E., Tokad, Y., and Kesavan, H. K. *Analysis of discrete physical systems* 317
- Kollath, R. (*editor*) *Particle accelerators* 276
- Korganoff, A., and Pavel-Parvu, M. *Éléments de théorie des matrices carrées et rectangles en analyse numérique* 176
- Kraochvil, P. *Crystals* 178
- Krasnosel'skiy, M. A., *et al.* *Plane vector fields* 30
- Kunz, P. D., Lind, D. A., and Brittin, W. E. *Lectures in theoretical physics. Vol. 8—Nuclear structure physics* 30
- Kurrelmeyer, B., and Mais, W. H. *Electricity and magnetism* 429
- Kvasnica, J. *Physical fields* 178
- Laithwaite, E. R. *Induction machines for special purposes* 29
- Laithwaite, E. R. *Propulsion without wheels* 30
- Lamb, D. R. *Electrical conduction mechanisms in thin insulating films* 392
- Lammeraner, J., and Stafl, M. *Eddy currents* 353
- Levi, E., and Panzer, M. *Electromechanical power conversion* 478
- Lo, A. W. *Introduction to digital electronics* 132
- Lockyer, K. G. *An introduction to critical path analysis (2nd edn.)* 481
- Loucks, T. *Augmented plane wave method* 481
- Lowe, R., and Mansell, J. W. *Basic electrical circuit theory* 318
- Lyons, E. *David Sarnoff—a biography* 318
- McKelvey, J. P. *Solid-state and semiconductor physics* 429
- Martin, D. H. *Magnetism in solids* 317
- Marvan, M. *Negative absolute temperatures* 178
- Matveyev, A. N. *Principles of electrodynamics* 133
- Mayofis, I. M. *Plastics insulating materials* 176
- Meirovitch, L. *Analytical methods in vibrations* 480
- Messenger, R. *The doors of opportunity—a biography of Dame Caroline Haslett* 388
- Miller, H. N. *Nondestructive high potential testing* 29
- Moody, N. F. *Semiconductors and their circuits. Vol. 1—Selected semiconductor theory* 29
- Moon, B. A. *Computer programming for science and engineering* 178
- Murray-Shelley, R. *Teach yourself computer programming* 481
- Muto, T. (*editor*) *The physics of semiconductors* 176
- Nekrasov, A. M., and Roktian, S. S. *Long-distance electrical transmission between the V.I. Lenin hydroelectric station and Moscow* 317
- Nichols, K. G., and Vernon, E. V. *Transistor physics* 57

Some recent books (continued)

- *1967 steam tables* 392
- Nissim, J. A. *A new physics of matter and energy* 318
- *Nuclear electronics. Conference proceedings, Bombay, 22–26 November 1965* 130
- Olesen, H. L. *Radiation effects on electronic systems* 319
- Patek, K. *Lasers* 479
- Petitclerc, A. *Théorie et pratique des circuits à transistors* 57
- *Physics measurements in operating power reactors* 319
- Pitman, R. J. G. *Automatic control systems explained* 178
- Porter, W. A. *Modern foundations of systems engineering* 176
- Potter, R. K., Kopp, G. A., and Kopp, H. G. *Visible speech* 178
- *Protective relays application guide* 30
- Rado, G. T., and Suhl, H. (*editors*) *Magnetism—Vol. IIB* 390

Some recent books (continued)

- Rolt, L. T. C. *The mechanicals—progress of a profession* 388
- Rubin, M., and Haller, C. E. *Communication switching systems* 30
- Ryder, J. D. *Engineering electronics (2nd edn.)* 480
- Schultz, W. *Measuring and testing with square wave signals* 30
- Scroggie, M. G. *Phasor diagrams* 57
- Shkarofsky, I. P., Johnston, T. W., and Bachynski, M. P. *The particle kinetics of plasmas* 318
- Shrader, R. L. *Electronic communication (2nd edn.)* 480
- Skobel'Tsyn, D. V. (*editor*) *Radio telescopes* 133
- Smith-Rose, R. L. (*editor*) *Proceedings of the 7th international space science symposium, Vienna, 1966* 276
- Spreadbury, F. G. *Electronic inverters* 479
- Stanford, W., and Hill, G. B. *Cooling towers—principles and practice* 429
- Stover, W. A. (*editor*) *Circuit design for audio, AM/FM, and TV* 389
- Summer, W. *Physical laboratory handbook* 30

Some recent books (continued)

- Taylor, E. O., and Boal, G. A. (*editors*) *Electric power distribution (415 V–33 kV)* 57
- Thewlis, J. (*editor*) *Encyclopaedic dictionary of physics—supplementary volume 1* 177
- Thorp, J. S. *Masers and lasers: physics and design* 392
- Urgosik, B. *Physical electronics* 481
- Vitkovitch, D. (*editor*) *Field analysis: experimental and computational methods* 134
- Watson, J. *Semiconductor circuit design* 390
- Wells, R. *Silicon and germanium power rectifier technology* 134
- Wilkes, M. V. *A short introduction to numerical analysis* 30
- Williams, H. P. *Antenna theory and design. Vol. 2—The electrical design of antennae* 178
- Witt, A. C. G. *Electrical distribution in papermills* 177
- Wolfendale, E. *Transistor circuit design and analysis* 177
- Wolff, E. A. *Antenna analysis* 29
- Zabetakis, M. G. *Safety with cryogenic fluids* 319